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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,376	01/15/2004	Xinliang David Li	200313024-1	5436

22879 7590 07/02/2007
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EXAMINER

KANG, INSUN

ART UNIT	PAPER NUMBER
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2193

MAIL DATE	DELIVERY MODE
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07/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/758,376

Applicant(s)

LI ET AL.

Examiner

Insun Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/15/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responding to application papers filed on 1/15/2004.
2. Claims 1-35 are pending in the application.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
4. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

5. The abstract of the disclosure is objected to because the abstract contains the phrase "one embodiment disclosed relates" in line 1 which can be implied. Correction is required. See MPEP § 608.01(b).

Claim Objections

6. Claims 22-23 are objected to because of the following informalities: Per claim 22, there appears a typographical error in line 3: "modif'd" needs to be corrected to "modified."

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As per claim 23, this claim is rejected for dependency on the above rejected parent claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 35 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Per claim 35, it is unclear what “modified/referenced” in line 2 means.

Interpretation: modified or referenced.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 26-35 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 26-30 are non-statutory because they are directed to a “system” that are considered to be a program per se without recitation of a computer or a computer-storage medium embodying the claimed computer program. The claimed program is disembodied arrangement without creating any functional interrelationship, either as part

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of the stored data or as part of the computing processes performed by the computer (“acts”) or the computer storage medium so as to enable the computer to perform the claimed program as recited. Therefore, the claims are non-statutory.

Claim 31-35 are non-statutory because they are directed to an “object file” that is considered to be a program per se without recitation of a computer or a computer-storage medium embodying the claimed computer program. The claimed program is disembodied arrangement without creating any functional interrelationship, either as part of the stored data or as part of the computing processes performed by the computer (“acts”) or the computer storage medium so as to enable the computer to perform the claimed program as recited. Therefore, the claims are non-statutory.

The following link on the World Wide Web is for the United States Patent And Trademark Office (USPTO) policy on 35 U.S.C. §101. The following link on the World Wide Web is for the United States Patent And Trademark Office (USPTO) policy on 35 U.S.C. §101.

http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-14, 16-23, 25-29, 31-33, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato (US Patent 6,292,940).

Per claim 1:

Sato discloses:

- accessing a first file including source code therein; accessing a second file including object code therein and further including object file summary information (i.e. col. 9 lines 50-65)
- and further including object file summary information; and generating the executable binary file from at least the first and second files (i.e. col. 12 lines 54-57)
- wherein the object file summary information is used in optimizing the executable binary file generated (i.e. col. 12 lines 40-47).

Per claim 2:

Sato further discloses:

- disambiguating memory accesses otherwise considered aliased using the object file summary information (i.e. col. 10 lines 15-24).

Per claim 3:

Sato further discloses:

- wherein the object file summary information includes an extension to a linker symbol table and summary intermediate representation (SIR) (i.e. col. 12 lines 40-47).

Per claim 4:

Sato further discloses:

- wherein the extension to the linker symbol table includes a flag indicating whether a procedure exposes a memory address by storing the address in a location accessible outside the procedure (i.e. col. 16 lines 19-29).

Per claim 5:

Sato further discloses:

- wherein the SIR includes a summary symbol table (i.e. col. 12 lines 20-25).

Per claim 6:

Sato further discloses:

- wherein the summary symbol table includes global and static symbols accessed in the procedure, formal parameters of the procedure, return location for the procedure, and other procedures called by the procedure (i.e. col. 6 lines 60-64).

Per claim 7:

Sato further discloses:

- wherein a symbol is referenced in the summary symbol table in using an associated summary symbol identifier (SYMID) (i.e. col. 10 lines 15-25).

Per claim 8:

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Sato further discloses:

- wherein a symbol entry includes a linker identifier (LI_ID) of the entry from a linker symbol table (i.e. col. 10 lines 15-25).

Per claim 9:

Sato further discloses:

- wherein the SIR uses an operator for memory referencing (i.e. col. 12 lines 62-67).

Per claim 10:

Sato further discloses:

- wherein the SIR uses an operator to adjust the address expression by an offset (i.e. col. 12 lines 54-62).

Per claim 11:

Sato further discloses:

- wherein the SIR uses an operator to take an address of a function or variable (i.e. col. 12 lines 33-39).

Per claim 12:

Sato further discloses:

- wherein the SIR uses an operator to merge pointer values from different control flow paths (i.e. col. 12 lines 62-67).

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Per claim 13:

Sato further discloses:

-vwherein the SIR uses an operator to represent direct procedure calls (i.e. col. 10 lines 35-38).

Per claim 14:

Sato further discloses:

- wherein the SIR uses an operator to represent indirect procedure calls (i.e. col. 10 lines 20-25)..

Per claim 16:

Sato further discloses:

- wherein the SIR includes a control data structure comprising a link field for each procedure that points to an SIR block of a next procedure (i.e. col. 2 lines 35-40).

Per claim 17:

Sato further discloses:

- the SIR includes a control data structure comprising a table having links to an SIR block for each procedure (i.e. col. 10 lines 15-24).

Per claim 18:

Sato further discloses:

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- determining variables modified by and referenced by function calls in the object code using the object file summary information (i.e. col. 6 lines 42-59).

Per claim 19:

Sato further discloses:

- the object file summary information includes an extension to a linker symbol table and per-procedure summary data (i.e. col. 10 lines 15-24).

Per claim 20:

Sato further discloses:

- wherein the extension to the linker symbol table includes a first flag indicative of whether a procedure modifies non-local variables and a second flag indicative of whether the procedure references non-local variables (i.e. col. 9 lines 25-37; col. 13 lines 14-25).

Per claim 21:

Sato further discloses:

- wherein the extension to the linker symbol table includes a second flag indicative of whether the procedure modifies global/static variables excluding callees and a third flag indicative of whether the procedure references non-local variables excluding callees (i.e. col. 13 lines 14-25; col. 14 lines 52-61).

Per claim 22:

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Sato further discloses:

- wherein the per-procedure summary data comprises a linked list of entries corresponding to symbols directly mod-refined in a procedure (i.e. col. 15 lines 4-17)..

Per claim 23:

Sato further discloses:

- wherein each entry comprises a linker identifier of a corresponding symbol and flags indicative of whether that symbol is modified or referenced (i.e. col. 15 lines 19-30).

Per claim 25:

Sato further discloses:

- wherein multiple files including object code are accessed and used in compiling the program (i.e. col. 12 lines 20-25).

Per claims 26-27, they are the system versions of claims 1-2 respectively, and are rejected for the same reasons set forth in connection with the rejection of claims 1-2 and 13 above.

Per claim 28:

Sato further discloses:

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- a module that uses the object file summary information to determine variables modified by and referenced by function calls in the object file (i.e. col. 16 lines 19-30).

Per claim 29:

Sato further discloses:

- the translator comprises: a compiler configured to translate source files into intermediate files; and a linker configured to access the object file summary information and communicate information to the compiler relevant to optimizing compilation of the program (i.e. fig. 4).

Per claims 31-33 and 35, they are the object file versions of claims 1, 3, 5, 6, and 22 respectively, and are rejected for the same reasons set forth in connection with the rejection of claims 1, 3, 5, 6, and 22 above.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 15 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US Patent 6,292,940) in view of Haber et al. (US Patent 6,966,055) hereafter Haber.

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Per claim 15:

Sato does not explicitly teach the SIR uses a no-operation type operator to discard values. However, Haber teaches such a nop instruction was known in the pertinent art, at the time applicant's invention was made, to replace with any removed or redundant code (i.e. col. 5 lines 5-10). It would have been obvious for one having ordinary skill in the art to modify Sato's disclosed system to incorporate the teachings of Haber. The modification would be obvious because one having ordinary skill in the art would be motivated to replace any removed instructions for timing purposes.

Per claim 34:

It is the object file version of claim 9-15, respectively, and is rejected for the same reasons set forth in connection with the rejection of claims 9-15 above.

15. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US Patent 6,292,940) in view of Hiranandani et al. (US Patent 5,812,855) hereafter Hiranandani.

Per claim 24:

Sato does not explicitly teach that the second file comprises a load module that is a shared library of procedures. However, Hiranandani teaches it was known in the pertinent art, at the time applicant's invention was made, to reuse existing code (i.e. col. 9 lines 42-46). It would have been obvious for one having ordinary skill in the art to modify Sato's disclosed system to incorporate the teachings of Hiranandani. The

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modification would be obvious because one having ordinary skill in the art would be motivated to gain faster execution and code reusability.

16. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US Patent 6,292,940) in view of Soroker et al. (US Patent 6,219,834) hereafter Soroker.

Per claim 30:


Sato does not explicitly teach a feedback provider that provides a communications interface between the compiler and the linker. However, Soroker teaches compiler extensions comprising APIs for communication between a compiler and a linker was known in the pertinent art, at the time applicant's invention was made, to enable the communication among different programs (i.e. col. 2 lines 66 to col. 3 line 17). It would have been obvious for one having ordinary skill in the art to modify Sato's disclosed system to incorporate the teachings of Soroker. The modification would be obvious because one having ordinary skill in the art would be motivated to enhance the communication functionality of the compiler with the linker.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Insun Kang whose telephone number is 571-272-3724. The examiner can normally be reached on M-R 6:30-5 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MENG AI AN can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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